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American Water Works Association
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Federal Communications Commission
Office of Secretary

"Dedicated to Safe Drinking Water"

April 21, 1997

Federal Communications Commission
Room 222
1919 M Street N.W.
Washington D.C. 20554

Re: Notice of Proposed Rulemaking, Amendment of the Commission's Rules Regarding Multiple Address Systems (MAS) (WT Docket No. 97-81)

Dear Commission Members:

Enclosed are the comments from the American Water Works Association on *Notice of Proposed Rulemaking, Amendment of the Commission's Rules Regarding Multiple Address Systems* (WT Docket No. 97-81). If you have any questions on these comments, please feel to contact myself or Steve Via in our Washington Office.

Yours sincerely,

John H. Sullivan
Deputy Executive Director

Enclosures

cc: AWWA Telecommunications Technical Workgroup
Jon DeBoer
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APR 2 1 1997

Federal Communications Commission
Office of Secretary

Final Written Comments on the Notice of Proposed Rule Making on Amendment of the Commission's Rules Regarding Multiple Address Systems (MAS)

(WT Docket No. 97-81)

Submitted to:
Federal Communications Commission (FCC)
1919 M Street N.W.
Washington D.C. 20554

Submitted by:
American Water Works Association
1401 New York Avenue, Suite 640
Washington D.C. 20005
(202) 628-8303

April 21, 1997

SUMMARY

Since the inception of the MAS service in the early 1980's, electric, gas, and water utilities have invested millions of dollars in MAS to meet internal communications needs: infrastructure management, distribution automation, and operation of multiple remote facilities (i.e., supervisory control and data acquisition - SCADA). This technology is the primary, and in many cases the only method of monitoring and controlling diversely located utility system components. The migration to MAS is driven by consumer rate pressures; tighter environmental controls; and need to eliminate unreliable, interrupted alternative communication mediums, such as dependence on phone line or high-traffic cellular systems.

The FCC conclusion that the 932/941 MHz and the unused 928/959 MHz MAS bands should be designated for subscriber based services is totally inappropriate because it is based upon misleading data, and should be reexamined. The fundamental reason for designating the 932/941 MHz spectrum for MAS use was to relieve the demand created by the exhaustion of the 928/952 MHz MAS channels. There is still a tremendous shortage of MAS frequencies to satisfy electric, gas, and water utility requirements today.

Recommendations

We are making a series of proposals which are intended to:

- Facilitate the further development and implementation of MAS;
- Designate spectrum set aside for use by private, internal MAS systems that operate on a non-fee-for-service (non-subscriber) basis. Eligibility for these channels includes water, gas, and electric utilities (also referred to as "quasi-public safety" agencies). This set-aside would consist of the existing 928/952/956 MHz band, and twenty channels in the 932/941 MHz band;
- Eliminate of all licenses that are not strictly for private, internal, non-commercial use in the 928/952/956 MHz band;
- Maintain the current MAS purpose of licensing point-to-multipoint MAS systems;
- Preserve all 928/952/956 on a site-specific license basis only; and
- Include anti-speculation provisions in all MAS quasi-public safety pools.

Specific recommendations are as follows:

(1) We oppose the proposed transfer arrangement of existing MAS channels to Economic Area (EA) licensing status in the 928/952/956 MHz band. EA licensing in the MAS band will promote confusion, interference, and ineffective spectrum use.

(2) We suggest relocating all existing, and allow no new commercial subscriber-based licenses in the 928/952/956 MHz band.

(3) We recommend the preservation of 100 percent of all channels in the 928/952/956 to satisfy internal operational communications needs for private, non-subscriber MAS application use only (including quasi-public safety entities). Any currently unused channels in this band must be protected from speculative and subscriber based applicants. The conclusion that the 928/952/956 MHz band should be designated exclusively for private, internal operational use as originally intended is laudable and long overdue. A narrow and specific definition of private internal operations use needs to be promulgated.

(4) We suggest relocating commercial subscriber-based service entities to other spectrum.

(5) We believe that operation of mobile remotes in the MAS band is contrary to the intent of the Fixed Microwave Service and, therefore, no primary mobile service should be added. MAS licenses should maintain current point-to-multipoint configuration and be **site specific**. MAS band should, to fulfill the needs and objective of its initial design, stay with its original allocation of fixed-point to multipoint service only. Applicants proposing mobile operations on a primary basis should consider other radio services where the proposed method of operation is accepted standard of operation.

(6) To meet the needs of the quasi-public safety entities and other private non-subscriber agencies, we recommend a twenty channel set aside in the 932/941 MHz band be established to ensure adequate spectrum is maintained for operation of critical national infrastructure (i.e. electric, gas, and water utilities). Since the 932/941 MHz band was allocated to provide relief for the exhausted 928/952/956 MHz band, it is in the public interest to re-examine those MAS

applications which do not propose to provide subscriber service. (It is believed that approximately 2,500 of actual quasi-public safety applications were submitted.) As MAS technology finds more applications for quasi-public safety entities, the demand will exceed the supply. The proposed twenty channels in the 932/941 MHz band are required to ensure adequate spectrum for maintaining critical national infrastructure.

Final Written Comments on the Notice of Proposed Rule Making on Amendment of the Commission's Rules Regarding Multiple Address Systems (MAS) (WT Docket No. 97-81)

I. INTRODUCTION

The American Water Works Association is pleased to have the opportunity to comment on the Notice of Proposed Rulemaking (NPRM) on the *Amendment of the Commission's Rules Regarding Multiple Address Systems*. The American Water Works Association (AWWA) is an international, non-profit, scientific and educational society dedicated to the improvement of drinking water quality and supply. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our 55,000 plus members represent the full spectrum of the drinking water "community": treatment plant operators and managers, environmentalists, scientists, academicians, and others who hold a genuine interest in water supply and public health. Our membership includes approximately 3,900 public water suppliers which treat and distribute about 75 percent of the nation's drinking water.

The comments provided herein reflect the consensus of the AWWA, which, given the depth and breadth of its representation, also reflect the predominant view of the nation's public water systems (PWSs) and drinking water professionals. It is therefore appropriate that these AWWA comments be heard on behalf of the drinking water community in general.

These comments have been prepared with an intended spirit of cooperation. Only through an open sharing of expertise and information will the public's health be protected. With this in mind, we would like to recognize and acknowledge the Federal Communications Commission's (FCC's) openness to discuss and understand the issues surrounding this and other recent rulemakings. These comments are AWWA's third comments to the FCC on proposed rulemakings, and we look forward to continuing to work with the FCC so that the perspective of the drinking water community can be better understood by the Commission and their staff. These comments are organized with general

comments on various telecommunications issues first, followed by specific comments that reference paragraphs in the Notice of Proposed Rule Making.

Since the inception of the MAS service in the early 1980's, electric, gas, and water utilities have invested millions of dollars in MAS to meet internal communications needs: infrastructure management, distribution automation, and operation of multiple remote facilities (i.e., supervisory control and data acquisition - SCADA). This technology is the primary, and in many cases the only method of monitoring and controlling diversely located utility system components. The migration to MAS is driven by: consumer rate pressures; tighter environmental controls; and the need to eliminate unreliable, interrupted alternative communication mediums, such as dependence on phone line or high-traffic cellular systems.

The FCC conclusion that the 932/941 MHz and the unused 928/959 MHz MAS bands should be designated for subscriber based services is totally inappropriate because it is based upon misleading data, and should be reexamined. The fundamental reason for designating the 932/941 MHz spectrum for MAS use was to relieve the demand created by the exhaustion of the 928/952 MHz MAS channels. There is still a tremendous shortage of MAS frequencies to satisfy electric, gas, and water utility requirements today.

Recommendations

We are making a series of proposals which are intended to:

- Facilitate the further development and implementation of MAS;
- Designate spectrum set aside for use by private, internal MAS systems that operate on a non-fee-for-service (non-subscriber) basis. Eligibility for these channels includes water, gas, and electric utilities (also referred to as "quasi-public safety" agencies). This set-aside would consist of the existing 928/952/956 MHz band, and 20 channels in the 932/941 MHz band;
- Eliminate all licenses that are not strictly for private, internal, non-commercial use in the 928/952/956 MHz band;
- Maintain the current MAS purpose of licensing point-to-multipoint MAS systems;
- Preserve all 928/952/956 on a site-specific license basis only; and
- Include anti-speculation provisions in all MAS quasi-public safety pools.

Specific recommendations are as follows:

(1) We oppose the proposed transfer arrangement of existing MAS channels to Economic Area licensing status in the 928/952/956 MHz band. EA licensing in the MAS band will promote confusion, interference, and ineffective spectrum use.

(2) We suggest relocating all existing, and allow no new commercial subscriber-based licenses in the 928/952/956 MHz band.

(3) We recommend preserving 100 percent of all channels in the 928/952/956 to satisfy internal operational communications needs for private, non-subscriber MAS application use only (including quasi-public safety entities). Any currently unused channels in this band must be protected from speculative and subscriber based applicants. The conclusion the 928/952/956 MHz band should be designated exclusively for private, internal operational use as originally intended is laudable and long overdue. A narrow and specific definition of private internal operations use needs to be promulgated.

(4) We suggest relocating commercial subscriber-based service entities to other spectrum.

(5) We believe that operation of mobile remotes in the MAS band is contrary to the intent of the Fixed Microwave Service and, therefore, no primary mobile service should be added. MAS licenses should maintain current point-to-multipoint configuration and be **site specific**. MAS band should, to fulfill the needs and objective of its initial design, stay with its original allocation of fixed-point to multipoint service only. Applicants proposing mobile operations on a primary basis should consider other radio services where the proposed method of operation is accepted standard of operation.

(6) To meet the needs of the quasi-public safety entities and other private non-subscriber agencies, we recommend that a twenty channel set aside in the 932/941 MHz band be established to ensure adequate spectrum to maintain operation of critical national infrastructure (i.e. electric, gas, and water utilities). Since the 932/941 MHz band was allocated to provide relief for the exhausted 928/952/956 MHz band, it is in the public interest

to re-examine those MAS applications which do not propose to provide subscriber service. (It is believed that approximately 2,500 of actual quasi-public safety applications were submitted.) As MAS technology finds more applications for quasi-public safety entities, the demand will exceed the supply. The proposed twenty channels in the 932/941 MHz band are required to ensure adequate spectrum for maintaining critical national infrastructure.

II. SPECIFIC COMMENTS

Specific comments on FCC WT Docket No. 97-81 on a paragraph-by-paragraph basis follows:

Background Paragraph: 4

Reliance by **water** suppliers on MAS for point-to-multipoint communication systems, was not addressed by the Notice of Proposed Rulemaking. Access to MAS is critical to real-time monitoring and remote facility control by PWSs. MAS use by PWSs is particularly important due to the immediate relationship between secure-uninterrupted system control and the public's health and safety.

Since the inception of the MAS service in the early 1980's, PWSs as well as other utilities have invested millions of dollars in MAS technology and systems. These include infrastructure management, and distribution automation involving operation of multiple remote facilities. This technology is the primary and in many cases, the only method for real-time monitoring and controlling diversely located utility system components. The migration to MAS is driven by: consumer rate pressures; tighter environmental controls; and unreliable, obsolete alternative communication mediums such as leased telephone company phone lines and radio systems that are prone to interference and failure due to their being shared with voice systems in the private and commercial land mobile services.

With the proliferation of 931 MHz common carrier paging established under Rule Part 22.531, which authorized a maximum of 3500 watts Effective Radiated Power (ERP), MAS systems in major metropolitan areas began to suffer reliability problems caused by overwhelming interference. Examples of metropolitan areas with this problem include: Washington/Baltimore, Miami, Houston, San Diego, Los Angeles, San Francisco, Chicago, Detroit, and many others.

With the proliferation of 929 MHz private carriers paging under Rule Part 90.494, which authorized a maximum of 3500 watts ERP, increases in the noise floor and interference has rendered portions of many MAS systems in major metropolitan areas unusable (including those cities listed above).

The technical ramifications of locating these high power paging services adjacent to the low power MAS band was not considered. As a result, PWSs and other utilities are forced to use more MAS spectrum in order to achieve the same levels of performance. This scenario places these entities in a precarious position due to the severe lack of available MAS spectrum. We seek to ensure that similar results are avoided in proposed new service allocations such as those described in the subject Notice of Proposed Rulemaking, and to ensure that additional avenues for obtaining much needed MAS authorizations for PWSs and other utilities result from this action..

Background Paragraph: 7

The conclusion that the 932/941 MHz and 928/959 MHz MAS bands should be designated for subscriber services is based on misleading premises. Although 50,000 plus applications for the forty channel pairs in the 923-932.5 and 941-941.5 MHz bands were received, and over 95 percent were filed by applicants seemingly proposing to provide subscriber-based service (a figure for which additional documentation is requested), one should not conclude that the public interest is necessarily being served by re-characterizing this spectrum as a commercial service.

A fundamental reason for designating this spectrum for MAS use was to relieve the demand created by the exhaustion of the 928/952 MHz MAS channels. There is still a tremendous shortage of MAS frequencies to satisfy utility requirements today.

Since a first-come-first served methodology was selected to award licenses in the 932-941 band, any informed investor with the $155.00 filing fee could apply for a license, having the same chance of selection as a bonafide prospective MAS user. The similar selection process for the 800 MHz Specialized Mobile Radio Service (SMR) licenses demonstrated the potential of financial benefit for being awarded a license. Speculators learned from the financial windfalls obtained in that process, and applied that knowledge in submitting multitudes of applications for 932/941 MHz authorizations.

A major portion of the 50,000 applications received may have been filed by speculators, as most individual applicants do not have the financial resources to assemble and operate a subscriber based service. In addition, utilities may be reluctant to engage outside interests to provide critical services such as SCADA, therefore, one would question who would have comprised the speculative applicant's customer base.

All applications do not further the public interest equally. An application from a utility requiring spectrum to provide reliable service to millions of rate-payers is significantly different from an individual proposing to provide a speculative service to a hypothetical customer base.

Discussion - Paragraph: 8

The equipment, technology, and applications for MAS have become more advanced since the 1980's and the demand for MAS channels continues to grow. In major metropolitan areas, the supply of MAS channels has been exhausted for years. Using the present 90 mile protection criteria and voluntary short-spacing agreements seems to provide efficient use of the limited spectrum on a non-interfering basis. Site-specific licensing for private users is less complicated and more efficient than its geographical area licensing counterpart, particularly in metropolitan areas with several applicants.

Spectrum Allocation - Paragraph: 9

There are no non-Federal licensees in the 932.5-941.5 MHz spectrum because of the FCC freeze on application processing after the close of the 1992 filing windows. This is not to be construed as there being no long standing or current demand for these channels. The 928.85-929 MHz and 959.85-960 MHz channels are also exhausted in major metropolitan areas.

Paragraphs: 10 and 11

As described above, the conclusion that the 932/941 MHz and 928/959 MHz MAS bands should be designated for subscriber services appears to be based on misleading premises. A major portion of the 50,000 applications received were very likely filed by speculators hoping to receive royalties for use of the licenses, as most individual applicants do not have the financial resources to assemble and operate a subscriber based service.

We disagree that the magnitude of speculative applications logically leads to a conclusion that all but 5 of 40 channels in the 932/941 MHz spectrum should be allocated for commercial subscriber use. Clearly, the magnitude of bonafide private, internal MAS applications (a number of 2,500 is derived from the figures provided in the Notice of Proposed Rulemaking) indicates a large legitimate need for MAS authorizations. This supports, the original rationale for designating this spectrum for MAS use to relieve the demand created by the exhaustion of the 928/952 MHz MAS channels in 1992.

In regard to other spectrum allocations, a cursory check of licensing in the 932.5-935/941.5-944 MHz point-to-point band seems to be underutilized in many parts of the country and could feasibly supplant exhausted MAS channels.

Paragraph: 12

Many of the channels within the 928-928.85 and 952-952.85 MHz bands, including the original Power Radio Service channels, appear to have been licensed by entrepreneurs to provide subscribers service to a speculative customer base. Many of the 956.325-956.45 MHz channels are licensed to paging companies as simulcast links.

All (100 percent) of these channels could be used to satisfy internal communications needs of public safety, business, and industrial entities even if there was no conflicting competition from for-profit private carriers, and the demand for channels will still not have been met. As such, any currently unused channels in this band (928/952/956 MHz) must be protected from speculative and subscriber-based applicants. The band should be classified for use only by private, internal systems having no fee-for-service application, as proposed in the following paragraph.

Paragraph: 13

The conclusion that the 928/952/956 MHz bands should be designated exclusively for private, internal use as originally intended, is laudable, if not long overdue. A more narrow and specific definition of private internal use needs to be promulgated. It is necessary to distinguish those applicants who use this spectrum exclusively for internal purposes without any fee-for-service access relationship to outside entities from others where this relationship exists.

Many entities, such as central alarm and vending machine monitoring companies, which use this spectrum as an integral part of their end product are licensed as private internal users. It is important to note that these entities have a fee-for-service relationship with customers in which the customer benefits from subscription based access to the provider's facilities. This is normally achieved using equipment supplied by the provider at the customers' premises. These entities are selling a service incorporating the use of radio rather than selling radio service itself and should be appropriately considered private carriers.

In metropolitan areas, many MAS channels are currently licensed to subscriber based carriers. We oppose the proposal to "grandfather" these licensees for two reasons:

(1) The Notice of Proposed Rulemaking is being pursued to create spectrum allocations for just these types of services. It stands to reason that these incumbent licensees would profit by relocating their services to the proposed EA-based 932/941 MHz spectrum.

(2) The vacated channels can used by private entities for conventional MAS applications, as intended for the band, and as clearly demonstrated a need exists for additional channels.

Guidelines to relocate these subscriber licensees should be promulgated as quickly as possible to minimize hardship claims made on behalf of the affected parties.

Paragraph: 14

Geographic area licensing, when applied to subscriber-based systems, provides the advantages of reducing administrative burdens and simplifying system expansion for subscriber based services, but may be viewed as anti-competitive as it also makes obtaining frequencies more difficult for newer or smaller applicants in the same service area.

In contrast, we strongly deem geographic area licensing as not practical for internal, private MAS systems, which do not have the need or resources to adequately cover such large regions. Providing service to an entire region is not normally an objective for a private user and partitioning or disaggregation may not be technically or administratively feasible or desirable.

The five channel pair set-aside for Federal Government/Public Safety use is commendable, but inadequate. As MAS technology continues to find future applications, these sectors will vastly increase their use, creating additional demand for channels.

In addition, a set-aside process is strongly advocated for private entities who do not qualify under the strict Public Safety eligibility rules. We advocate that a set-aside of 20 channels be established for private, internally used MAS systems; certainly no fewer than 10 channels should be set-aside for the needs of national critical infrastructure providers. Specifically excluded from this set-aside are MAS systems which generate revenue through a fee-for-service arrangement.

The eligible entities for the set-aside channels includes PWSs, utilities and other quasi-public safety agencies, in addition to several other classifications of businesses. The set-aside is necessary, at least for quasi-public safety entities, to ensure adequate spectrum in this band to maintain operation of critical national infrastructure. Justification for these channels and their use by PWSs and other utilities is based on the following:

(1) In most metropolitan areas, these quasi-public safety entities operate their real-time monitoring and control systems using several traditional MAS channels (928/952 MHz), occupying between 20 and 40 percent of the allocated channels. A similar percentage of the 932/941 MHz channels will be required to sustain normal growth of these systems.

(2) Additional application technologies for wireless operations are being implemented by these entities as they are continually adapting to changing needs of their "customers" (i.e. the public). Wireless data access to enterprise networks, real-time customer access to billing data, and many other applications necessitate use of additional spectrum.

We suggest either a strict set-aside for these non-fee-for-service channels, or an arrangement between this group of entities and the Federal/Public Safety entities, whereby these channels would also be available to Federal and Public Safety agencies on a case-by-case basis if their designated five channels were to become exhausted in a geographic area.

Paragraph: 15

Sustained practices for site-by-site licensing of bonafide MAS users for 928/952/956 MHz MAS band is recommended (quasi-public safety and other non-fee-for-service entities). Present lack of adequate spectrum for these purposes clearly indicates that subscriber services should not be authorized in this band.

We strongly suggest that implementing EA-licensed subscriber services in this band will cause disruptive interference to the quasi-public safety incumbents who are licensed on a site-by-site basis. We therefore advocate that **no new EA-licensed services be authorized in the 928/952/956 MHz band. Further, we advocate relocation of current subscriber-based (fee-for-services) licensees to other bands (such as those designated for such services by this Notice of Proposed Rulemaking).**

It seems reasonable to employ geographic area licensing for subscriber-based operations (outside of the set-aside spectrum recommended above) in situations where the applicant can demonstrate a demand and ability to provide substantial service to the entire region in question. Therefore, in exchange for the latitude to provide service in a particular area with minimal regulatory restraints, the applicant must accept the burden of providing satisfactory service to the entire region subject to build-out requirements.

Subscriber based services do not provide the level of availability (reliability) required for many applications, particularly in the operation of Public Safety and quasi-public safety (PWS and other utility) systems. As much, it is questionable how prolific subscriber based MAS service is really likely to become. Private systems are typically implemented to achieve a specific internal operational objectives. The objectives are usually a function of service area and not necessarily geographical or political boundaries. As such, licensing a private system for coverage in an EA, Basic Trading Areas (BTA), or other region when the system requires less geographical coverage is not efficient spectrum policy.

If Part 101 shall continue to govern the radio spectrum above 928 MHz, all use of that spectrum, including Part 22 and 90 services should be consolidated within Part 101 to prevent incompatible

services from being allocated adjacently. An example of this oversight is evident in the placement of the MAS and paging services mentioned previously in Background Paragraph. 4.

Paragraph: 17

We concur that EA's are a suitable choice of geographic licensing of subscriber-based MAS systems as mandated. However, an alternative of solely licensing EA's to applicants would be to allow incumbents, as well as new applicants, to continue to apply for licenses on a site specific basis, and as systems develop that serve an EA, consolidate those licenses for geographical licensing. We do not agree, however, that EA's mirror the size and development of existing private MAS systems. Private systems have a size and shape tailored to the particular internal business objectives of the licensee. This size is many times governed by the political "jurisdiction" of the agency, its customer service area, and communications performance requirements.

Paragraph: 18

We do not agree with a regional or national set-aside of selected 932/941 MHz channels, in pattern after Personal Communications Services (PCS) allocations. The PCS radio service was conceived as a regional to nationwide service. Proponents of a nationwide MAS service should be able to identify suitable spectrum in other areas, such as the narrowband PCS band. Allocating channels exclusively for regional or nationwide use is inappropriate and contrary to the intended application and scope of the MAS radio service.

Paragraph: 19

As commented above, granting of any EA or subscriber-based licenses in the 928/952/956 MHz band is inappropriate for spectrum conservation and interference reasons. Interference protection issues described in this paragraph are substantiation for this position. With widespread use of these channels in MAS SCADA per-site licensed operation, we feel that any EA based authorization in this band will result in un-reconcilable interference with critical, in-service systems. The criticality of these systems is evident in the need for uninterrupted supplies of water, electricity, gas, and petroleum to the citizens of the country.

The existing protection criteria cited offers some resistance to co-channel interference, but offers no immunity from decreased channel quality and fade margin due to the increased noise floor and receiver overload from adjacent channel or neighboring channel transmitters.

Paragraph: 20

Current mileage for short space co-channel separation are: 90 miles, 70 miles, and 50 miles for Fixed-to-Fixed, Fixed-to-Mobile, and Mobile-to-Mobile use, respectively. The stated separation of 25 miles is inconsistent with these, and is questioned as to its effectiveness, in light of those separations currently in the regulations.

The service radius for protection purposes should take onto consideration the distance to the radio horizon as a function of antenna height, not an arbitrary assumed distance. In FCC Public Notice 1301, dated December 6, 1985, the service radius in miles was to be calculated as equal to the square root of two times the antenna height in feet In any case, the protection criteria should be responsive to the needs of the incumbent operation. Allowing incumbents the flexibility to modify existing systems as long as the signal level is not increased beyond their licensed service area rather than establishing an arbitrarily 25 mile radius, is in the public interest. A protection criteria in terms of signal strength contour is appropriate as long as the value chosen is protective of the incumbent at all times.

Paragraph: 21

The licensing approach proposed could provide many of the benefits cited in the paragraph, as applied to EA-based subscriber services in allocated bands, and not Federal/Public Safety, and quasi-public safety private systems.. Due diligence must be afforded to protect the incumbents.

Paragraph: 22

We concur with proposal to minimize service area boundary interference. The exact field strength level should be based on current industry levels, as provided in the comment process.

Paragraph: 23

We strongly disagree with the proposed transfer arrangement of existing MAS channels to EA status in the 928/952/956 MHz band. Any such transfer, along with EA licensing of the new licensee, will result in harmful interference with existing critical SCADA MAS applications used for public infrastructure maintenance and operation. In addition, lack of available channels for traditional private MAS in this band suggests that "freed-up" channels should be made available exclusively to these private (quasi-public safety) applications. Similarly, negotiated transfers of assignments should be restricted to operations exactly matching the original licensees authorization.

In major metropolitan areas, potential applicants in the PWS - utility arena have been waiting for years for a MAS frequency pair to become available. To arbitrarily transfer spectrum from an incumbent to an EA with cancellation of the incumbent's license, is a disregard of the spectrum needs of other private systems.

Channel transfer to an EA license in these circumstances will undoubtedly result in harmful interference to private MAS incumbents due to the size of the EA and its overlap with incumbent MAS service areas.

Paragraph: 24

Spectrum limits are in the public interest because they reduce channel hoarding for speculative interests. Minimum loading requirements should also be a prerequisite for retaining existing spectrum and obtaining additional channels.

We concur that there should be a limit on the number of MAS channels that a single licensee may hold in each geographic area and with the imposition of a 45 MHz cap on the aggregation of cellular broadband PCS and SMR spectrum within a geographic area.

Paragraph: 25

The failure to impose aggregation limits on EA licensees will foster development of a new monopolistic industry, spectrum re-sellers. This will have the effect of preventing entities with limited

financial resources from obtaining licenses. These less affluent entities will be forced to lease spectrum or carrier services from license holders.

While leasing services is acceptable for many types of businesses, it is wholly unacceptable to critical SCADA MAS applications. The reliability of service and accountability needed to ensure uninterrupted service to the public (i.e., water, gas, electricity, etc.) mean little to the commercial service provider because the return on investment is much higher when their systems are designed and operated for "non-critical" user populations. As an example, few, if any public safety agencies in the country rely on commercial radio services for their primary wireless communications needs. The caretakers of the nation's critical infrastructure are in essentially the same critical environment, and must have reliable systems to meet their public service obligations.

Operation of mobile remotes, as proposed, is contrary to the intent of the Fixed Microwave Service, and we do not concur with their operation in these bands.

Paragraph: 27

While EA partitioning may provide opportunities for small or disadvantaged businesses to participate in the provision of subscriber-based services, it is likely that those applicants awarded licenses are willing to allow such participation voluntarily motivated by generosity. This arrangement may be a precursor to failure of the small or disadvantaged business.

Paragraph: 28

The EA partitioning participants should be jointly and separately responsible for meeting the build-out and substantial service deadlines, as if there were no partitioning arrangement.

The key issue unique to MAS which may impede implementing a broadband PCS-style partitioning arrangement is the elevation of the fixed subscriber antennas, resulting in coverage overlap. MAS also lacks the public demand that PCS was designed to satisfy, therefore, subscriber distribution will probably be less uniform.

Paragraph: 29

See Paragraph. 28, above.

Paragraph: 30

Permitting disaggregation for EA licensees may promote spectral efficiency for provision of subscriber services.

Paragraph: 31

The parties of EA licensees in a disaggregation agreement should be jointly and separately responsible for meeting construction requirements, substantial service requirements, and the other terms of the original authorization.

Paragraph: 32

See Para. 31, above.

Paragraph: 33

Providing both partitioning and disaggregation for EA licensees may promote spectral efficiency for providing subscriber services. All parties to the agreements should be expected to be jointly and separately compliant to all terms of the original authorization.

Paragraph: 34

Not distinguishing between border and non-border areas for EA licensing in this band will promote confusion, interference, and ineffective spectrum use.

Paragraph: 35

Applicants should employ independent due diligence to determine the viability of their business plan in all EAs they are pursuing.

Paragraph: 38

Defined construction period and loading benchmarks need to be mandated to prevent the spectrum inefficiencies outlined in the paragraph. It may be appropriate to establish several different methodologies, whereby acceptance of any of which when satisfied, could define reasonable construction progress.

Paragraph: 39

Unlike cellular and PCS, there is not a universal demand for MAS service. As a result, determining substantial service based coverage to the public is not meaningful. Failure to meet some type of substantial service guideline should be evidence that public interest is not being served. In such cases, the original authorization should be terminated by the FCC. Re-licensing the channel in a first-come first served, per-site scenario is suggested.

Paragraph: 40

Applicants should be able to aggregate multiple channels, subject to spectrum caps, providing a documented demonstration of need. Failure to require a showing encourages warehousing and resale of spectrum, and is not necessarily in the public interest. Applying bandwidth flexibility to incumbents would be in the public interest if a documented showing of need were required. The spectrum should be licensed on a per 12.5 KHz channel basis, and aggregated by the licensee as required.

Amend the referenced thirty-five channel pairs available for EA licensing to read fifteen channel pairs, pursuant to the recommendation for set-aside channels for exclusive use of quasi-public safety and other non fee-for-service entities (and possibly Federal/Public Safety), as discussed earlier in these comments.

Paragraph: 41

While non-point-to-multipoint operations may be allowed on a limited, secondary basis, the MAS spectrum should be used only on a point-to-multipoint primary basis. Applicants proposing other operations on a primary basis should consider other radio services where the proposed method of operation is the accepted standard of operation.

Paragraph: 42

We do not believe that geographic licensing should be permitted in the 928/952/956 MHz band. Interference issues and the reality that service area coverages of typical MAS users does not correspond to the EA designations substantiate this position.

The proposal to allow other than point-to-multipoint operation is contrary to the intent of the MAS band. The predicted result of this excessive flexibility will be interference and universal chaos at the expense of all licensees, including those responsible for maintenance, protection, and operation of the nation's critical infrastructure. It is not good spectrum management policy to expect the MAS band to fulfill the needs and objectives of several other radio services at the expense of those using the band for its original allocation, fixed point-to-multipoint service. Particularly, when the historic designated use has limited allocation, and a rapidly expanding need exists, which is founded in providing safe and reliable public service.

Paragraph: 43

Communication between mobile masters and fixed remotes is spectrally efficient due to the low emissions required. Communication between fixed masters and mobile remotes should be prohibited because those needs are more properly addressed by the mobile radio services.

Paragraph: 44

Determination of regulatory status should be clearly defined by the presence or absence of a fee-for-service relationship between the licensee and any subscribers of the licensee's services. Licensees who provide a service using radio spectrum to subscribers, even though the communications service itself may not constitute the end product, should be subject to telecommunications carrier regulations. Typical examples of such a relationship would be central alarm and vending monitoring services which use MAS radio to provide subscriber alarm or monitoring information.

The proposal to establish a presumption that all MAS geographic area licensees are telecommunications carriers is inaccurate, and will be particularly flawed if private systems must become geographic area licensees. The determination that the 928/952/956 MHz bands are private

and the ability for interested parties to challenge the regulatory status of any MAS licensee would improve operation of bonafide applicants and reduce speculation.

Paragraph: 45

Licensees should be required to notify the Commission and include evidence of frequency coordination and interference protection if they propose major changes to the character of their original authorization.

Paragraph: 48

Licenses to provide Private Operational Fixed Microwave (POFM) MAS should not be awarded through competitive bidding.

Paragraph: 49

See Background Paragraph. 7 response, above.

Paragraph: 50

Frequencies in the 928/952/956 MHz bands are predominantly occupied by private entities to satisfy their internal communications needs and subscriber-based alarm monitoring services. This band should be allocated exclusively for private, internal MAS applications. Fee-related subscriber services in this band should be relocated, as described earlier in these comments.

Paragraph: 51

See Background Paragraph. 7, above.

Many entities such as utilities have a tremendous demand for MAS spectrum. However, because they intend to use the channels for internal communications, and are of limited financial means, they are not competitive in the auction arena, even if they value the spectrum more highly than a common carrier.

Paragraph: 52

In consideration of the fact the 932/941 MHz band was allocated to provide relief for the exhausted 928/952 MHz band, it may be in the public interest to reexamine those applications which do not propose to provide subscriber service. Those applicants could be invited to reapply for participation in a lottery for a limited number of channels to satisfy some of their internal requirements not previously met. The balance of the channels could be made available for auction.

An additional alternative to consider is to reallocate any un-licensed frequencies remaining at the close of the auction for private use, subject to award by lottery or some other method.

Paragraph: 53, 54, 55

Auction of spectrum in these bands prohibits reasonable access to all but very few public service providers (quasi-public safety agencies) because of their financial structure. As a result, the services provided to the public in maintenance and operation of the nations infrastructure would be severely hampered. Therefore, we assert that the auctions, as proposed in the Notice of Proposed Rulemaking, are not in the public's best interest.

Paragraph: 56

Co-primary mobile operations are not supported, as described above. Mobile units crossing EAs will create end user confusion and operational interference detrimental to all EA licensees.

Paragraph: 57

We do not agree with the position that MAS applicants had available substitutes to their applications for the 932/941 MHz channels in the lottery process. In the most areas throughout the country, the potential applicants have been waiting many years for MAS frequencies to become available. In many cases, business plans were put on hold awaiting spectrum relief. In other cases, even less desirable alternate methods (i.e., less reliable and more costly telephone and subscriber radio) of fulfilling communications requirements have been employed by necessity.

Paragraph: 58

The decision to use competitive bidding is also contrary to the expectations of the remaining five percent of applicants (2,500 applicants - using data presented in the Notice of Proposed Rulemaking) who, in good faith, expected to obtain MAS license authorizations critical to their internal operations.

Paragraph: 59

Simultaneous multiple round bidding has proven effective in other auctions conducted by the Commission, and should be effective if used to auction portions of the 932/941 MHz spectrum not set-aside for exclusive use by Federal/Public Safety, quasi-public safety, and other non-fee-for-service entities, as described in these comments.

Paragraph: 60

Qualifications as a small business in the MAS service should mirror the definitions employed in the PCS and WCS services.

Paragraph: 61 and 62

Provisions for small business in the MAS service should mirror the definitions employed in the PCS service.

Paragraph: 63

Unjust enrichment guidelines should mirror those used in the WCS service.

Paragraph: 65 and 66

The five channel set-aside for Federal Government and Public Safety is commendable, but inadequate. As MAS technology finds more applications for these entities, the demand will exceed the supply. Additional channels for these entities should be investigated, as the *Final Report of the Public Safety Wireless Advisory Committee* (PSWAC) suggests. We propose that an additional twenty channels be set-aside for utility (quasi-public safety) and other non-fee-for-service entities. These channels are required to ensure adequate spectrum for maintaining critical national infrastructure.